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January 30, 1996

Nancy Morlock, 6PD-N
U.S. Environmental Protection Agency
1445 Ross Avenue
Suite 1200
Dallas, Texas 75202-2733

Dear Ms. Morlock:

The Hazardous and Radioactive Materials Bureau (HRMB) of the New Mexico Environment Department (NMED) has reviewed Sandia National Laboratories' (SNLA) March 1995 *Site-Wide Hydrogeologic Characterization Project, Calendar Year 1994 Annual Report*. NMED's comments are included as Attachment I. The comments are based on the information provided by SNLA and on discussions with personnel of the NMED DOE Oversight Bureau.

If there are any questions, please contact me at (505) 827-1557 or Ronald Kern of my staff at (505) 827-1560.

Sincerely,

Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau

BJG:bs

cc: John Gould, DOE, Albuquerque Operations Office
Sue Collins, SNLA, Task Leader
Ronald Kern, Manager, RCRA Technical Compliance Program
Barbara Hoditschek, Manager, RCRA Permits Program
Lloyd Aker, POC, DOE Oversight Bureau
John Parker, Manager, Tech. Support Pg., DOE Oversight Bureau
Bob Sweeney, RCRA Technical Compliance Program
SNLA Red File, 1996

ATTACHMENT I

NEW MEXICO ENVIRONMENT DEPARTMENT (NMED)
COMMENTS

SANDIA NATIONAL LABORATORIES (SNLA)
MARCH 1995 SITE-WIDE HYDROGEOLOGIC CHARACTERIZATION PROJECT
CALENDAR YEAR 1994 ANNUAL REPORT

GENERAL COMMENTS

ITEM

1. As previously noted in NMED's review of the 1993 Site-Wide Hydrogeologic Characterization Project Report (October 12, 1994, item 4), a clear discussion of why the various studies were conducted and how they contribute to the overall understanding of site-wide hydrogeology should be included with the report.

2. Considerations beyond regulatory requirements, such as those described in the Tiger Team Assessment (Anonymous, DOE/EH-0176) and in the DOE Oversight report on adequacy of monitoring at SNLA/ITRI (McDonald and Stone, NMED/DOE/AIP-93/1), should be addressed.

3. The following concerns and recommendations documented by McDonald and Stone (Initial Assessment of the Ground-water Monitoring Programs at Sandia National Laboratories and the Inhalation Toxicology Research Institute, KAFB, New Mexico, NMED/DOE/AIP-93/1) have not been addressed:

   a. SNLA should construct a geologic map at the water table, indicating the hydraulic conductivity of the different geologic units. Figure 3.2.7 on page 4-40 and the tables on pages 3-42 & 3-43 provide information of this type for part of the facility.

   b. Ground water flow models should be constructed from the above map to test the conceptual hydrogeologic model.

   c. Separate maps of water levels for perched zones should be included.

   d. The significance of site-wide vertical ground water flows should be considered, particularly at those locations where vertical flows may result in the migration of contaminants from Environmental Restoration sites.

e. Additional aquifer tests (pumping tests, slug tests, etc.) should be performed to determine aquifer hydraulic parameters.

4. A schedule for completion of tasks for the annual Site-Wide Hydrogeologic Characterization report should be included.

5. Have the Data Quality Objectives (DQOs), as described in the Program Implementation Plan, Section 4.2, been prepared for the SWHC Project?

6. Base-wide groundwater quality and hydrogeochemical information should be evaluated and incorporated in the SWHC report.

7. Base-wide potentiometric surface maps should be included in the SWHC report.

8. Presentation of water level and geochemical data should include day/month/year the data were measured. See pages 3-39, K-6, K-18, L-7, L-17, L-21, M-8 and M-12.

9. The base map used is inconsistent regarding the location and shape of TA-IV. A correct base map should be used throughout the report.

SPECIFIC COMMENTS

ITEM

10. SECTION 1.0 - INTRODUCTION

Page 1-5, Table 1.2.1; "SNL/NM Priority List of Operable Units for Fiscal Year 1995". A priority-ranked list of the Solid Waste Management Units (SWMUs) should also be included.

11. SECTION 3.0 - SITE-WIDE HYDROGEOLOGIC SETTING

a. **Page 3-32, 3.2.4.1.2, Hydrogeologic Region 2, Paragraph 1; "In addition, the faults themselves will likely have a significant impact on groundwater flow."** The nature of groundwater flow associated with faulting should be determined. This will require an evaluation of groundwater chemistry, geology, and aquifer parameters in the vicinity of the faults.

b. **Page 3-33, 3.2.4.2, Groundwater flow direction, Paragraph 5; "While several wells in HR-3 monitor saturation in**

the thin alluvial cover, it is unlikely that the groundwater at these locations is hydraulically connected to the Santa Fe Group aquifer to the west." See comment 11.a.

c. **Page 3-33, 3.2.4.2; Groundwater flow direction.** In addition to lateral ground water flow, vertical flow components should be addressed for each of the hydrogeologic regions defined by SNLA. General recharge and discharge areas should be investigated using nested wells within each region.

d. **Page 3-38, Paragraph 2.** In addition to lateral hydraulic gradients, vertical hydraulic components should be investigated. Flow nets, considering both horizontal and vertical flow directions, should then be prepared. Vertical flows may be particularly significant in areas such as TA-II where there may have been large liquid discharges and where there may be multiple saturated zones.

e. **Page 3-38, Paragraph 3; "Future SWHC Project investigations will...improve our understanding of the HR-3...".** Potentiometric surface maps for HR-3 should be constructed by SNLA.

f. **Page 3-42, Table 3.2.5; "SNL/KAFB Area Santa Fe Group Hydraulic Conductivity Data".** Additional aquifer testing should be conducted to quantify the hydraulic conductivity of the SNLA Hydraulic Regions.

g. **Page 3-43, Table 3.2.6; "SNL/KAFB Area Shallow Alluvium and Bedrock Hydraulic Conductivity Data".** See Comment 11.f.

12. APPENDIX J - STANDARD REFERENCE WELL FILES

a. **Page J-2, Figure J.1; "Location of All Wells on SNL/KAFB".** Well and spring labels are not readable. Adjust the map so that locations of wells can be identified and the other designations made readable.

b. **Page J-3, J.3.1 ERDMS Well File Module, Paragraph 2. "The ERDMS contains the following fields of data:...".** Borehole deviation survey data should be included.

c. **Page J-4, J.4; FUTURE ACTIVITIES.** Discuss how springs will be treated. Include data fields that are appropriate for springs.

13. APPENDIX L - UPDATE ON THE PRELIMINARY ASSESSMENT OF GROUND-WATER HEAD ANOMALIES IN THE VICINITY OF TIJERAS ARROYO

Page L-10, Mechanism and Sources for Observed Shallow Groundwater Saturation "At TA-II, a possible source for recharge water could include waste-water discharge to ditches and leach fields. At TAGC, a possible source for recharge water could be irrigation." Data from water chemistry studies, particularly evaluations of the concentrations of nitrate and chloride, should be used to help describe actual or potential impacts on ground water from recharge sources.

14. APPENDIX N -BACKGROUND CONCENTRATIONS OF CONSTITUENTS OF CONCERN TO THE SNL/NM ER PROJECT: AN INTERIM REPORT

Page N-4, Figure N.1; "Percentage of Total Soil Data Values by Technical Area." The map shows that most of the soil data points are concentrated in a small area. As with groundwater, cf. Comment 6, soil data should be evaluated and incorporated into the report using base-wide coverage.

15. PLATES

The legend on **Plate III** and **Plate IV** should include a brief definition of the map units (similar to Figure A.2.1 on page A-5).

The potentiometric surface shown on **Plate V** may have been constructed using data from more than one aquifer. For example, monitoring well TA2-NW1-325 in Tech Area IV was constructed with a 30 foot screen from 295 to 325 feet below ground level (in a "perched" aquifer) while KAFB-5, north of Tech Area I, is screened from 504 to 1004 feet below ground level (in the "regional" aquifer). Separate potentiometric surface maps should be constructed for separate aquifers.